

REMARKS

Claims 1-12 are pending and under consideration in the above-identified application.

In the Office Action, Claims 1-12 were rejected.

In this Amendment, Claims 1, 2, 4, and 6 – 10 are amended, and Claims 5 and 12 are cancelled. No new matter has been introduced as a result of this Amendment.

Accordingly, Claims 1 – 4 and 6 – 11 are at issue.

I. 35 U.S.C. § 103 Obviousness Rejection of Claims 1-2 and 4-5

Claims 1-2 and 4-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chan* (U.S. Patent No. 6,527,457) in view of *Jokerst* (U.S. Patent No. 6,721,503). Although Applicant respectfully traverses this rejection, Claim 1 has been amended to clarify the invention and remove any ambiguities that may have been at the basis of this rejection.

Claim 1 is directed to an optical transceiver. The optical transceiver includes a light emitting element which converts an electric signal into an optical signal, a light receiving element which converts the optical signal into an electric signal thereby enabling a single-wire two-way communication by using an optical fiber, an optical integrated chip in which said light emitting element and said light receiving element are *integrally* formed, a light emitting section of said light emitting element and a light receiving section of said light receiving element are *coplanar on a surface of said optical integrated chip, and said light receiving section surrounds said light emitting section*; and a circuit board having a via hole for inserting said optical fiber. The optical integrated chip is mounted on one surface of said circuit board at a position where said light emitting section and said light receiving section are fitted into said via hole, said optical fiber extends through said via hole from the other surface of said circuit board *to a position where an end surface of said optical fiber is brought into contact with said optical integrated chip*, and said light emitting section and said light receiving section are placed at a distance such that a part of each section is in *contact with* a diameter portion of a core transversal cross-section of a core of said optical fiber.

That is, the light emitting section and the light receiving section are coplanar on a surface of the optical integrated chip, and the light receiving section surrounds the light emitting section. Further, the optical fiber extends through the via hole from the other surface of the circuit board

to a position where an end surface of the optical fiber is brought into contact with the optical integrated chip, and the light emitting section and the light receiving section are placed at a distance such that a part of each section is in contact with a diameter portion of a transversal cross-section of a core of the optical fiber.

Referring to Applicants' Figures 1 – 4 as illustrative examples, Applicant's claimed invention comprises an optical transceiver which includes a light emitting element for converting an electric signal into an optical signal, a light receiving element for converting an optical signal into an electric signal for carrying out a single-wire two-way communication by using an optical fiber 4, and a light emitting section 6 of the light emitting element and a light receiving section 7 of the light receiving element are coplanar on a surface of said optical integrated chip 2 and closely placed, and the light receiving section 7 formed around the light emitting section 6. A circuit board 3 is provided where a via hole 5 for inserting the optical fiber 4 is formed. The optical integrated chip 2 is mounted on one surface of the circuit board 3 at a position where the light emitting section 6 and the light receiving section 7 are fitted into the via hole 5, the optical fiber 4 is inserted into the via hole 5 from the other surface of the circuit board 3, and the light emitting section 6 and the light receiving section 7 are placed at a distance at which a part of each section is in contact with a diameter portion of a transversal cross-section of a core of the optical fiber 4.

This is clearly unlike *Chan* and *Jokerst*. The Examiner acknowledges that *Chan* fails to teach that the light emitting section and the light receiving section are placed at a distance at which a part of each section is in contact with a diameter portion of a transversal cross-section of a core of the optical fiber, but indicates that *Jokerst* allegedly does teach this feature and points to FIG. 1 of *Jokerst* for support.

However, *Jokerst* states in regard to FIG. 1 that (emphasis added):

“With reference to FIG. 1, shown is a bi-directional optical link 100 according to an embodiment of the present invention. The bi-directional optical link 100 includes a stacked arrangement of a thin film detector 103 and thin film emitter 106. The detector 103 is located on a host substrate 109 as shown. The detector 103 is preferably flat in shape with a relatively small thickness. The detector 103 includes an upper surface 113 oriented to receive incident light 116 from a predetermined direction 123, that is, for

example, normal to the upper surface 113. The incident light 116 propagates, for example, from an optical fiber 119 as shown where the optical fiber 119 has a core 126 and a cladding 129. *The emitter 106 is stacked over the detector 103.* Both the detector 103 and the emitter 106 include electrical contacts from which these devices are driven. *Both the detector 103 and the emitter 106 are independently optimized and bonded, for example, to a transceiver circuit (not shown) located on the host substrate 109."*

(See Column 2, lines 48 – 65). That is, *Jokerst* teaches that the emitter (light emitting section) 106 is stacked over the detector (light detecting section) 103, rather than being coplanar in the optical integrated chip and that the light receiving section surrounds the light emitting section, as required by Claim 1. Further, *Jokerst* also fails to teach or suggest that once the optical fiber extends through the via hole from the other surface of the circuit board to a position where an end surface the optical fiber is brought into contact with the optical integrated chip, the light emitting section and the light receiving section are placed at a distance such that a part of each section is in contact with a diameter portion of a transversal cross-section of a core of the optical fiber,

Thus, Claim 1 is patentable over *Chan* and *Jokerst*, taken singly or in combination with each other, as are dependent Claims 1 – 2 and 4 for at least the same reasons. The rejection of Claim 5 is moot in view of its cancellation.

Accordingly, Applicant respectfully requests that these claim rejections be withdrawn.

II. 35 U.S.C. § 103 Obviousness Rejection of Claim 3

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chan* in view of *Jokerst*, as applied to Claim 1 above, and further in view of *Nishii* (U.S. Publication No. 2002-0157862). Applicant respectfully traverses this rejection.

Claim 3 is dependent on Claim 1, which was shown above to be patentable over *Chan* and *Jokerst*. Moreover, like *Chan* and *Jokerst*, *Nishii* also fails to teach or suggest that the light emitting section and the light receiving section are coplanar on a surface of the optical integrated chip, and the light receiving section surrounds the light emitting section.

As such, Claim 1 is patentable over *Chan*, *Jokerst*, and *Nishii*, as is dependent Claim 3 for at least the same reasons.

Accordingly, Applicant respectfully requests that these claim rejections be withdrawn.

III. 35 U.S.C. § 103 Obviousness Rejection of Claims 6-9 and 11-12

Claims 6-9 and 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chan* in view of *Jokerst*, as applied to Claim 1 above, and further in view of *Forrest* (U.S. Patent No. 4,493,113). Applicant respectfully traverses this rejection.

Independent Claim 6 has been amended to recite the same distinguishable limitation as that of Claim 1. Thus, Claim 6 is patentable over *Chan* in view of *Jokerst*. Moreover, like *Chan* and *Jokerst*, *Forrest* also fails to teach or suggest that the light emitting section and the light receiving section are coplanar on a surface of the optical integrated chip, and that the light receiving section surrounds the light emitting section.

As such, Claim 6 is patentable over *Chan*, *Jokerst* and *Forrest*, as are dependent Claims 7 - 9 and 11 for at least the same reasons. The rejection of Claim 12 is moot in view of its cancellation.

Accordingly, Applicant respectfully requests that these claim rejections be withdrawn.

IV. 35 U.S.C. § 103 Obviousness Rejection of Claim 10

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chan* in view of *Jokerst* and *Forrest*, as applied to Claim 6 above, and further in view of *Nishii* (U.S. Publication No. 2002-0157862). Applicant respectfully traverses this rejection.

Claim 10 is dependent on Claim 6, which was shown above to be patentable over *Chan*, *Jokerst*, and *Forrest*. Moreover, in addition to *Chan*, *Jokerst*, and *Forrest*, *Nishii* also fails to teach or suggest that the light emitting section and the light receiving section are coplanar on a surface of the optical integrated chip, and that the light receiving section surrounds the light emitting section.

As such, Claim 6 is patentable over *Chan, Jokerst, Forrest and Nishii*, as is dependent Claim 10 for at least the same reasons.

Accordingly, Applicant respectfully requests that these claim rejections be withdrawn.

V. **Conclusion**

In view of the above amendments and remarks, Applicant submits that all claims are clearly allowable over the cited prior art, and respectfully requests early and favorable notification to that effect.

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